

(19)日本国特許庁 (J P)

(12) 公開実用新案公報 (U)

(11)実用新案出願公開番号

実開平6-44706

(43)公開日 平成 6 年(1994) 6 月14日

(51)Int.Cl.⁵

B 6 5 B 51/10
9/12

識別記号

U 8407-3E
7130-3E

庁内整理番号

F I

技術表示箇所

審査請求 未請求 請求項の数 1 (全 4 頁)

(21)出願番号 実願平4-80857

(22)出願日 平成 4 年(1992)11月24日

(71)出願人 000003665

株式会社ツムラ

東京都中央区日本橋 3 丁目 4 番10号

(71)出願人 592242660

株式会社東陽機械製作所

愛知県名古屋守山区大字瀬古字柴荷83番地

(72)考案者 橋ヶ谷 修司

静岡県藤枝市築地392番地 株式会社ツムラ静岡工場内

(74)代理人 弁理士 飯田 堅太郎 (外 1 名)

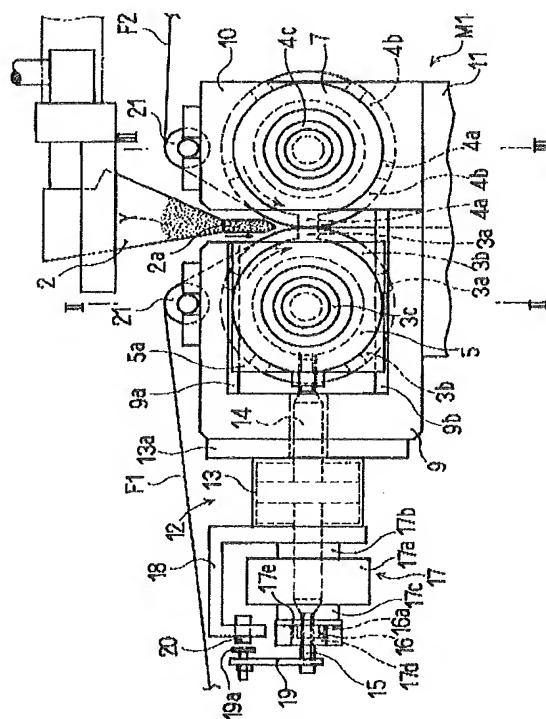
最終頁に続く

(54)【考案の名称】 製袋包装充填機のシール装置

(57)【要約】

【目的】 ヒータロールの熱や包装フィルム自体の厚薄の影響があっても、ヒータロールが包装フィルムを一定圧で挟持でき、熱シールする包装フィルムにピンホールやシール不良が発生することを防止することができる製袋包装充填機のシール装置を提供すること。

【構成】 シール装置M1は、ヒータロール3・4により、二枚の包装フィルムF1・F2を挟持しつつ、フィルムF1・F2間に内容物Yを充填し、相互のフィルムF1・F2の周縁を熱シールして分包品を製造する。一方のヒータロール3における両端の軸部3cを保持する軸受5は、各々、他方のヒータロール4に対して移動可能に、支持ブラケット9に支持されるとともに、エアシリンダ12のピストンロッド14に接続される。各エアシリンダ12は、ヒータロール3を他方のヒータロール4に対して押圧するように、作動される。



1

【実用新案登録請求の範囲】

【請求項1】 相互に逆回転する二本のヒータロールにより、二枚の対向する包装フィルムを挟持しつつ、前記包装フィルム間に内容物を充填し、相互の前記包装フィルムの周縁を熱シールして分包品を製造する製袋包装充填機のシール装置であって、少なくとも一方の前記ヒータロールにおける両端の軸部を保持する軸受が、それぞれ、他方の前記ヒータロールに対して移動可能に、支持ブラケットに支持されるとともに、前記各軸受が、それぞれ、流体圧シリンダのピストンロッドに接続され、前記各流体圧シリンダが、一方の前記ヒータロールを他方の前記ヒータロールに対して押圧するように、作動されることを特徴とする製袋包装充填機のシール装置。

【図面の簡単な説明】

【図1】 この考案の一実施例を示す部分省略正面図である。

【図2】 同実施例の一方のヒータロールの部分断面図であり、図1のII-II部位に対応する。

【図3】 同実施例の他方のヒータロールの部分断面図で*

2

*あり、図1のIII-III部位に対応する。

【図4】 同実施例に使用する包装フィルムの偏肉吸収機構を示す側面図である。

【図5】 図4のV-V部位を示す部分省略断面図である。

【図6】 同実施例が使用される製袋包装充填機の概略図である。

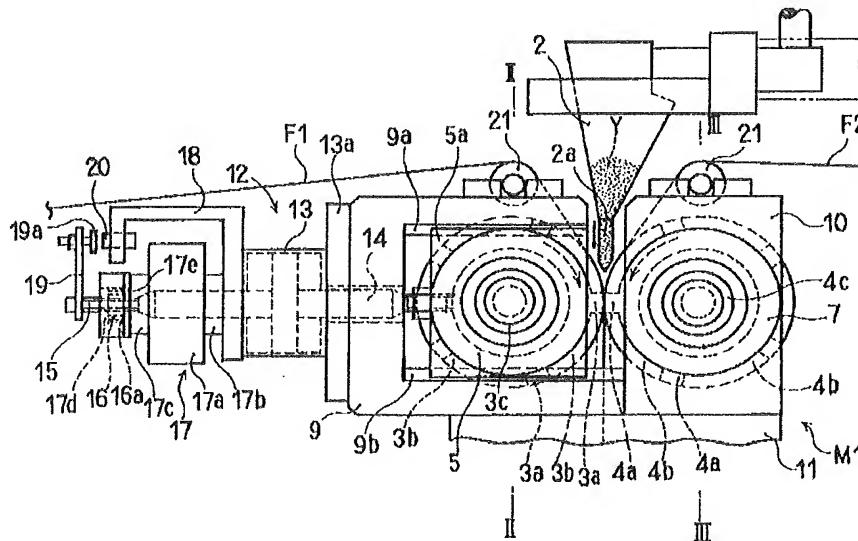
【図7】 同実施例で製造した後の製品を示す斜視図である。

10 【図8】 同実施例で製造した分包品の斜視図である。

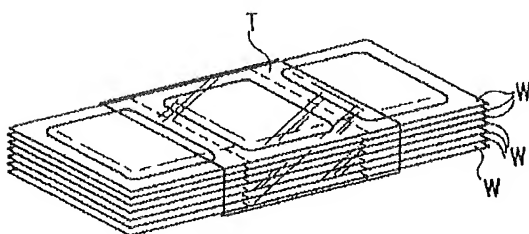
【符号の説明】

3・4…ヒータロール、
5・6…軸受、
9…支持ブラケット、
12…エアシリンダ、
14…ピストンロッド、
W…分包品、
F (F1・F2) …包装フィルム、
Y…内容物、
20 M0…製袋包装充填機、
M1…シール装置。

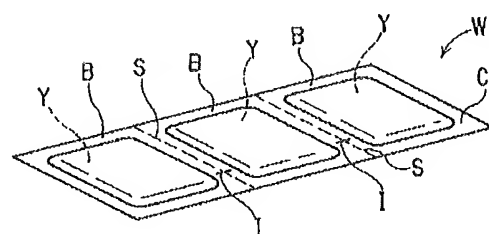
【図1】



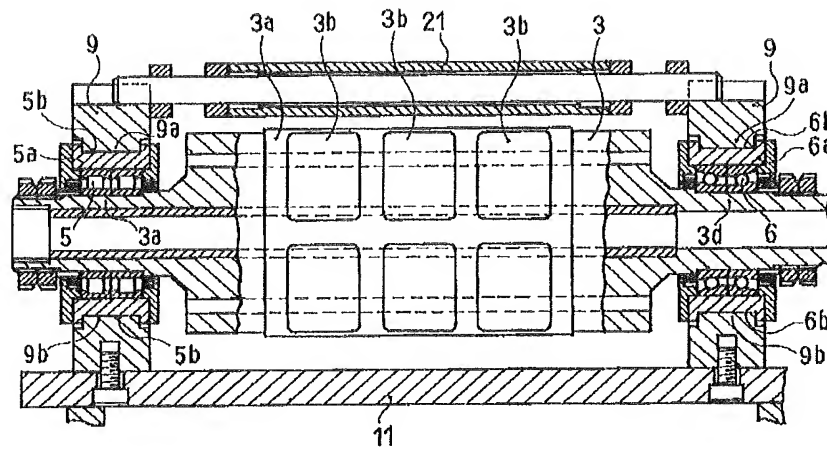
【図7】



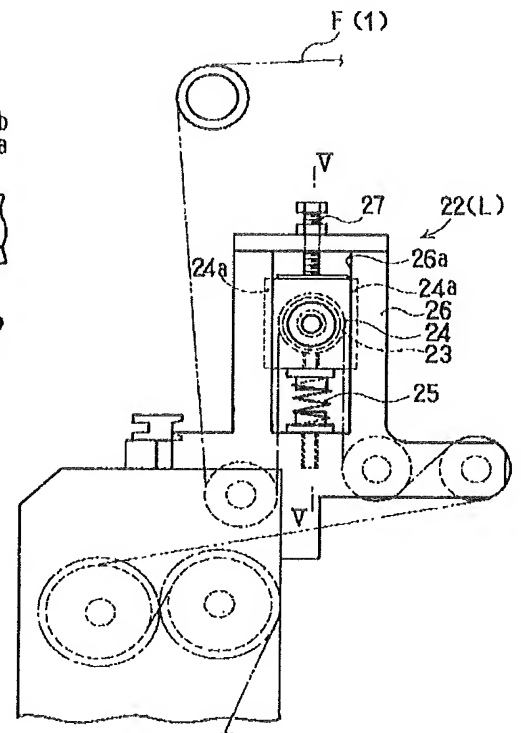
【図8】



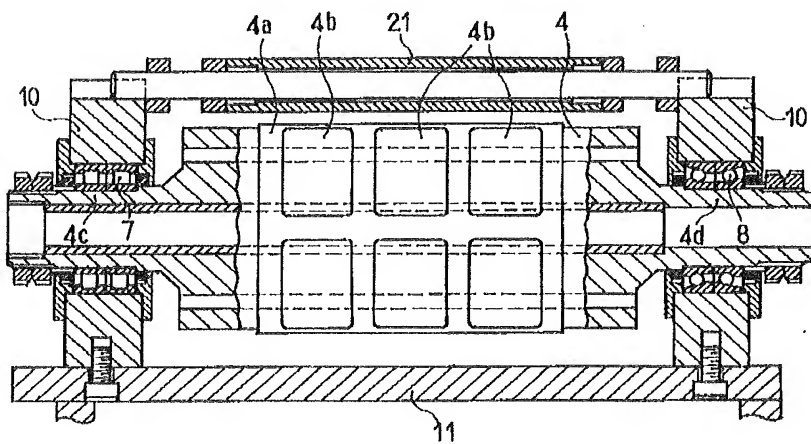
【図2】



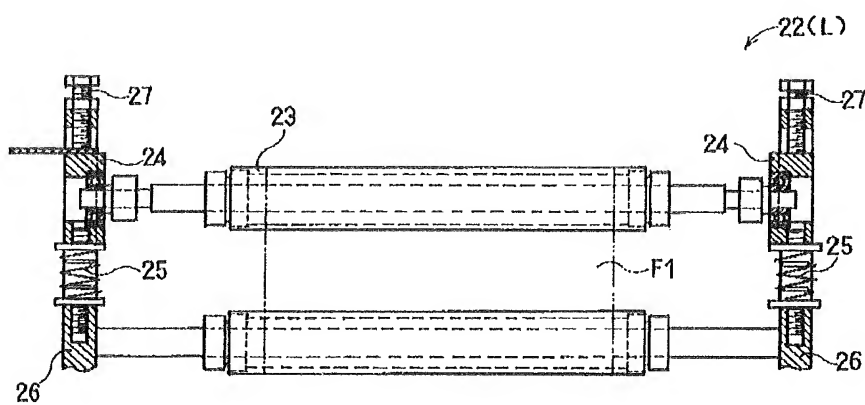
【図4】



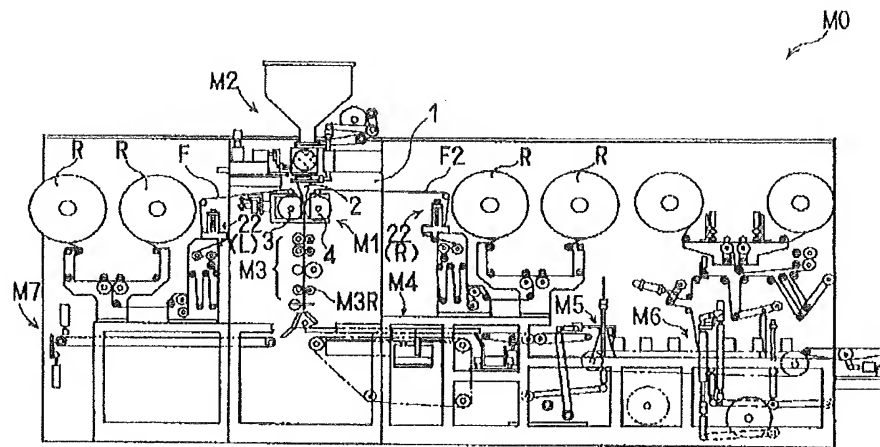
【図3】



【図5】



【図6】



フロントページの続き

(72) 考案者 望月 茂利
 静岡県藤枝市築地392番地 株式会社ツム
 ラ静岡工場内
 (72) 考案者 杉田 亨
 静岡県藤枝市築地392番地 株式会社ツム
 ラ静岡工場内

(72) 考案者 長澤 道男
 静岡県藤枝市築地392番地 株式会社ツム
 ラ静岡工場内
 (72) 考案者 石井 唯雄
 愛知県名古屋市西区名塚町2丁目103番地

【考案の詳細な説明】**【0001】****【産業上の利用分野】**

この考案は、粉体等の内容物を封入した分包品を製造する製袋包装充填機において、相互に逆回転する二本のヒータロールにより、二枚の対向する包装フィルムを挟持しつつ、包装フィルム間に内容物を充填し、相互の包装フィルムの周縁を熱シールして分包品を製造するシール装置に関する。

【0002】**【従来の技術とその課題】**

従来、この種の分包品のシール装置では、相互に逆回転する二本のヒータロールが、二枚の対向する包装フィルムを挟持しつつ、包装フィルム間に内容物を充填し、相互の包装フィルムの周縁を熱シールして分包品を製造していた。

【0003】

そして、従来のシール装置では、二本のヒータロールが、二枚の包装フィルムを挟持できるよう、ばねの付勢力を利用して、相互に密着するように構成されていた。

【0004】

しかし、従来のシール装置では、ヒータロールの包装フィルムを挟持する圧力をばねを利用して行なっていたため、ヒータロールの熱の影響によってばねの弾性力が変化して、包装フィルムを挟持するヒータロールの圧力を変動させ、包装フィルムにピンホールを形成したり、シール不良を生じさせる場合があった。

【0005】

また、供給される包装フィルム自体にも部分的に厚薄があり、この厚薄によっても、包装フィルムを挟持するヒータロールの圧力を変動させる場合があり、包装フィルムのピンホール等の発生を助長していた。

【0006】

なお、包装フィルムとしては、EPFP・SPFX等があり、それらの厚さは、0.06mm程度であるが、一枚の包装フィルムでも、その厚さが、0～0.012mmの範囲で変動している。

【0007】

この考案は、上述の課題を解決するものであり、ヒータロールの熱や包装フィルム自体の厚薄の影響があっても、ヒータロールが包装フィルムを一定圧で挟持できて、熱シールする包装フィルムにピンホールやシール不良が発生することを防止することができる製袋包装充填機のシール装置を提供することを目的とする。

【0008】

【課題を解決するための手段】

この考案に係るシール装置は、相互に逆回転する二本のヒータロールにより、二枚の対向する包装フィルムを挟持しつつ、前記包装フィルム間に内容物を充填し、相互の前記包装フィルムの周縁を熱シールして分包品を製造する製袋包装充填機のシール装置であって、

少なくとも一方の前記ヒータロールにおける両端の軸部を保持する軸受が、それぞれ、他方の前記ヒータロールに対して移動可能に、支持ブラケットに支持されるとともに、

前記各軸受が、それぞれ、流体圧シリンダのピストンロッドに接続され、

前記各流体圧シリンダが、一方の前記ヒータロールを他方の前記ヒータロールに対して押圧するように、作動されることを特徴とする。

【0009】

【考案の作用・効果】

この考案に係るシール装置では、少なくとも一方のヒータロールの両端の軸部を保持している軸受を、他方のヒータロールに対して移動可能に支持ブラケットに支持させるとともに、それぞれ、一定圧に容易に維持できるエアや油等の流体を利用した流体圧シリンダのピストンロッドと接続させて、一方のヒータロールを他方のヒータロールに押圧するように構成されている。

【0010】

そのため、流体圧シリンダの流体圧を一定にすれば、ヒータロールの熱がエアに加わったり、包装フィルムに厚薄があっても、包装フィルムを二本のヒータロールにより一定圧で挟持することができることとなる。

【0011】

したがって、この考案に係るシール装置では、ヒータロールによって包装フィルムを一定圧で挟持でき、包装フィルムのピンホールやシール不良の発生を防止することが可能となる。

【0012】

【実施例】

以下、この考案の一実施例を図面に基づいて説明する。

【0013】

実施例の製袋包装充填機M0は、図6～8に示すように、3つの分包Bからなる分包品Wを製造するとともに、分包品Wを7個集積してテープTでバンディングし、箱詰めるものである。

【0014】

そして、製袋包装充填機M0は、図6に示すように、計量充填装置M2、シール装置M1、カッタ装置M3、計量装置M4、集積装置M5、バンディング装置M6、図示しない箱詰装置、単包計量装置M7、を備えて構成されている。

【0015】

なお、計量充填装置M2は、一定量の内容物Yを計量してホッパ2からシール装置M1に供給するものである。なお、このホッパ2は、内容物Yの供給時には、降下してノズル2aをヒータロール3・4の凹部3b・4b内における包装フィルムF1・F2間に挿入して、内容物Yを充填することとなる。

【0016】

カッタ装置M3は、連続した分包品Wの左右両縁のカット、スリットS・アイノッチI（図8参照）の形成、さらに、1個ずつの分包品Wに分離させるカット、等を行なうものである。

【0017】

計量装置M4は、計量充填装置M2の計量を調整するものであり、集積装置M5は、分包品Wを7個集積させるものであり、バンディング装置M6は、集積した7個の分包品WをテープTでくくるものであり、箱詰装置は、テープTでバンディングした分包品Wを包装箱内に詰める装置である。

【0018】

また、単包計量装置M7は、計量充填装置M2の計量を調整するため、所定時、カッタ装置M3の所定の刃を作動させて分包品Wを1包ずつに分離させ、1包ずつの単包Bを計量するものである。

【0019】

実施例のシール装置M1は、図1～3に示すように、二本のヒータロール3・4を備えている。各ヒータロール3・4は、外周面に、分包品Wのシール部C（図7・8参照）を形成するための、凸部3a・4aと、シール部C以外を形成するため、すなわち、各分包Bに内容物Yを詰めるための凹部3b・4bと、を備えている。凸部3a・4aと凹部3b・4bとは、各ヒータロール3・4の周方向に沿って5個ずつ形成されており、ヒータロール3・4が、相互に1回転すると、5個の分包品Wを製造することとなる。

【0020】

また、各ヒータロール3・4の両端には、小径となった軸部3c・3d・4c・4dが形成されて、それぞれ、ベアリング（図符号省略）を備えた軸受5・6・7・8に支持されている。

【0021】

なお、各ヒータロール3・4の背面側の軸部3d・4dには、図示しないプーリが固着されて、製袋包装充填機M0の駆動源からの駆動力が図示しないベルトを介して伝達され、相互に同期して逆回転で回転するように構成されている。

【0022】

また、ヒータロール3・4の内部には、熱源としての図示しないヒータが内蔵され、各ヒータロール3・4を所定温度に維持するように構成されている。

【0023】

そして、軸受5・6は、外周に四角板状の摺動部材5a・6aを配置させて、支持ブラケット9に支持され、軸受7・8は、支持ブラケット10に保持され、支持ブラケット9・10は、それぞれ、支持板11に固定されている。支持板11は、製袋包装充填機M0のフレーム1（図6参照）に連結固定されるものである。

【0024】

支持ブラケット9は、逆コ字形としており、内周側の上下面に、水平方向に延びるガイドレール9a・9bを備え、各軸受5・6は、摺動部材5a・6aの上下面に形成された凹溝5b・6bをガイドレール9a・9bに嵌合させて水平方向に移動可能に支持ブラケット9に支持されている。

【0025】

支持ブラケット10は、各軸受7・8の周囲を覆うような四角板状として、移動させることなく各軸受7・8を保持している。

【0026】

さらに、軸受5・6には、それぞれ、エアシリンダ12のピストンロッド14が、支持ブラケット9を貫通して接続されている。

【0027】

各エアシリンダ12は、シリンダ本体13と、シリンダ本体13に対して低摩擦で摺動するピストンロッド14と、を備えて構成されるとともに、図示しない精密圧力調整弁を備えて、一定の圧力でピストンロッド14を右方へ移動させるように構成されている。なお、各エアシリンダ12は、シリンダ本体13のベース13aを利用して、支持ブラケット9に固定されている。

【0028】

また、各ピストンロッド14は、ヒータロール3から遠ざかる元部側をシリンダ本体13から突出させて、その端部に1mmのピッチの雄ねじ部15を備えている。

【0029】

これらの各雄ねじ部15には、外周面にスプライン16aを形成されたナット16が螺合され、各ナット16の外周には、微小角度調整機構17が配設されている。

【0030】

微小角度調整機構17は、内部に所定の歯車を内蔵しており、大径部17aを角度 θ 回転させることにより、小径部17bに対して小径部17cを $\theta/100$ 回転させるものである。この微小角度調整機構17は、シリンダ本体13に固定

された取付ブラケット18に、小径部17bを固定させている。そして、小径部17cの内部には、ナット16の外周面のスプライン16aに対応した凹部17dが形成され、凹部17dの内周面と底壁17eとによって、ナット16の回転とエアシリンダ12側への移動とを規制し、ナット16のエアシリンダ12から離隔する移動を許容している。

【0031】

なお、各ピストンロッド14の元部側の先端には、舌片19aを備えたセンサロッド19が取り付けられるとともに、舌片19aに対向して、取付ブラケット18に固定された近接スイッチ20が配設されている。この近接スイッチ20は、分包品Wの製造時に、シール部Cに内容物Yがかみ込まれた否かをチェックするものである。

【0032】

また、21は、支持ブラケット9・10の上部に配置されて、包装フィルムF1・F2をヒータロール3・4の間に導く、ガイドローラである。

【0033】

さらに、包装フィルムFの供給について述べると、図6に示すように、包装フィルムFのロールRから各ヒータロール3・4までの供給は、回転するヒータロール3・4自体の挟持と、カッタ装置M3の送りローラM3Rによって行なわれ、実施例のシール装置M1においては、図4～6に示すような包装フィルム偏肉吸収機構22L・22Rが配設されている。この偏肉吸収機構22Lと偏肉吸収機構22Rとは、包装フィルムF1・F2の幅方向に厚薄があったとしても、しわを発生させずに、ヒータロール3・4に供給させるものである。

【0034】

そして、偏肉吸収機構22Lと偏肉吸収機構22Rとは、対称形としているだけであり、機構的に差は無く、その機構を簡単に述べると、図4・5に示すように、テンションローラ23を備えて構成され、テンションローラ23は、両端を軸受24に支持させている。各軸受24は、コイルばね25によって上方へ付勢されるとともに、支持ブラケット26に上下動可能に保持されている。各軸受24の支持ブラケット26に対する保持は、軸受24の左右の縁に設けられた鋸部

24aを支持ブラケット26の孔26aの周縁に当接させて行なわれている。27は、軸受24・24の上方への移動を規制するボルトである。この偏肉吸収機構22では、包装フィルムFの幅方向に厚薄があっても、厚い部位の側の軸受24がコイルばね25の付勢力に抗して降下し、包装フィルムFの幅方向の全域にわたって、包装フィルムFにテンションを加えることができるため、しわを発生させずに、包装フィルムF1・F2をヒータロール3・4に供給することができることとなる。

【0035】

つぎに、実施例のシール装置M1の作動態様について説明すると、各ヒータロール3・4が相互に逆回転し、包装フィルムF1・F2を挟持しつつ、包装フィルムF1・F2間に内容物Yを充填し、相互の包装フィルムF1・F2の周縁を熱シールして分包品Wを製造することとなる。内容物Yの充填時には、ホップ2が降下し、ノズル2aをヒータロール3・4の凹部3b・4b内における包装フィルムF1・F2間に挿入して、内容物Yを充填することとなる。

【0036】

そして、作動時、実施例のシール装置M1では、ヒータロール3の両端の軸部3c・3dを保持している軸受5・6を、他方のヒータロール4に対して移動可能に支持ブラケット9に支持させるとともに、それぞれ、一定圧に容易に維持できるエアを利用したエアシリンダ12のピストンロッド14と接続させて、ヒータローラ3をヒータローラ4に押圧するように構成されている。

【0037】

そのため、エアシリンダ12のエア圧を一定にすれば、ヒータロール3の熱がエアに加わったり、包装フィルムF1・F2に厚薄があっても、包装フィルムF1・F2を二本のヒータロール3・4により一定圧で挟持することができることとなり、既述の考案の作用・効果の欄で述べたと同様な効果を奏する。

【0038】

また、実施例のシール装置M1では、ヒータロール3・4の間隙を調整する際、微小角度調整機構17の大径部17aを例えば1回転させれば、小径部17cとナットとを3.6°回転させることができる。すなわち、エアシリンダ12の

ピストンロッド14を、雄ねじ部15の1ピッチの1mmの $1/100$ である0.01mmの距離、軸方向に移動させることができ、各ピストンロッド14の先端の軸受5・6を介して、ヒータロール3・4間の微調整をミクロン単位で調整することができることとなる。そのため、包装フィルムF1・F2の厚さに対応して、ヒータロール3・4間の間隙を適切に調整でき、一層、熱シールする包装フィルムF1・F2にピンホールやシール不良が発生することを防止できる。

【0039】

なお、このナット16の回転時、各エアシリンダ12が一定のエア圧をかけてピストンロッド14を右方へ移動させるようにしているため、ナット16が雄ねじ部15から外れる方向（雄ねじ部15の先端方向）へ移動するように回転する場合には、軸受5・6を介して、ヒータロール3がヒータロール4に接近することとなる。逆に、ナット16が雄ねじ部15に深く配置されるように回転する場合には、軸受5・6を介して、ヒータロール3がヒータロール4から離れることとなる。

【0040】

また、実施例で熱シールする分包品Wとして、3つの分包Bからなるものを例示したが、勿論、1つあるいは2つ、さらに、4つ以上の分包Bからなる分包品Wを製造する場合に、本考案を応用することができる。

TECHNICAL FIELD

[Industrial Application]

In the bag manufacture package filling machine with which this device manufactures the separate-packaging article which enclosed contents, such as a granular material, It is related with the sealing device which is filled up with contents between packaging films, carries out the heat seal of the periphery of a mutual packaging film, and manufactures a separate-packaging article with two heater rolls rotated reversely mutually pinching the packaging film of two sheets which counters.

TECHNICAL PROBLEM

[Description of the Prior Art]

Conventionally, in the sealing device of this kind of separate-packaging article, pinching the packaging film of two sheets which counters, they were filled up with contents between packaging films, carried out the heat seal of the periphery of a mutual packaging film, and two heater rolls rotated reversely mutually were manufacturing the separate-packaging article.

And using the energizing force of a spring, two heater rolls comprised a conventional sealing device so that it might stick mutually, so that the packaging film of two sheets could be pinched.

However, since the pressure which pinches the packaging film of a heater roll was performed in the conventional sealing device using the spring, The elastic force of the spring changed with the influences of the heat of a heater roll, the pressure of the heater roll which pinches a packaging film was fluctuated, and there was a case where formed a pinhole in a packaging film or it was made to produce a sealing failure.

The packaging film itself supplied had thickness selectively, also by this thickness, the pressure of the heater roll which pinches a packaging film may be fluctuated, and generating of the pinhole of a packaging film, etc. was promoted.

There are EPFP-SPFX etc. as a packaging film, and although those thickness is about 0.06 mm, the thickness is changed in 0-0.012 mm even the packaging film of one sheet.

This device solves an above-mentioned technical problem.

Even if it has influence of the heat of a heater roll, or the thickness of the packaging film itself, a heater roll can pinch a packaging film with constant pressure, and it aims at providing the sealing device of the bag manufacture package filling machine which can prevent a pinhole and a sealing failure from occurring to the packaging film which carries out a heat seal.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is a partial abbreviation front view showing one example of this device.

[Drawing 2] It is a fragmentary sectional view of one heater roll of the example, and corresponds to the II-II part of drawing 1.

[Drawing 3] It is a fragmentary sectional view of the heater roll of another side of the example, and corresponds to the III -III part of drawing 1.

[Drawing 4] It is a side view showing the thickness deviation absorber style of the packaging film used for the example.

[Drawing 5] It is a partial abbreviation sectional view showing the V-V part of drawing 4.

[Drawing 6] It is a schematic diagram of the bag manufacture package filling machine with which the example is used.

[Drawing 7] It is a perspective view showing the product after manufacturing in the example.

[Drawing 8] It is a perspective view of the separate-packaging article manufactured in the example.

[Description of Notations]

3, 4 -- Heater roll,

5, 6 -- Bearing,

9 -- Bearing bracket

12 -- Air cylinder,

14 -- Piston rod,

W -- Separate-packaging article,

F (F1andF2) -- Packaging film

Y -- Contents,

M0 -- Bag manufacture package filling machine,

M1 -- Sealing device.

DETAILED DESCRIPTION

[Detailed explanation of the device]

[Industrial Application]

In the bag manufacture package filling machine with which this device manufactures the separate-packaging article which enclosed contents, such as a granular material, It is related with the sealing device which is filled up with contents between packaging films, carries out the heat seal of the periphery of a mutual packaging film, and manufactures a separate-packaging article with two heater rolls rotated reversely mutually pinching the packaging film of two sheets which counters.

[Description of the Prior Art]

Conventionally, in the sealing device of this kind of separate-packaging article, pinching the

packaging film of two sheets which counters, they were filled up with contents between packaging films, carried out the heat seal of the periphery of a mutual packaging film, and two heater rolls rotated reversely mutually were manufacturing the separate-packaging article.

And using the energizing force of a spring, two heater rolls comprised a conventional sealing device so that it might stick mutually, so that the packaging film of two sheets could be pinched.

However, since the pressure which pinches the packaging film of a heater roll was performed in the conventional sealing device using the spring, The elastic force of the spring changed with the influences of the heat of a heater roll, the pressure of the heater roll which pinches a packaging film was fluctuated, and there was a case where formed a pinhole in a packaging film or it was made to produce a sealing failure.

The packaging film itself supplied had thickness selectively, also by this thickness, the pressure of the heater roll which pinches a packaging film may be fluctuated, and generating of the pinhole of a packaging film, etc. was promoted.

There are EPFP-SPFX etc. as a packaging film, and although those thickness is about 0.06 mm, the thickness is changed in 0-0.012 mm even the packaging film of one sheet.

This device solves an above-mentioned technical problem.

Even if it has influence of the heat of a heater roll, or the thickness of the packaging film itself, a heater roll can pinch a packaging film with constant pressure, and it aims at providing the sealing device of the bag manufacture package filling machine which can prevent a pinhole and a sealing failure from occurring to the packaging film which carries out a heat seal.

[Means for Solving the Problem]

A sealing device concerning this device with two heater rolls rotated reversely mutually. It is filled up with contents between said packaging films, pinching a packaging film of two sheets which counters, It is a sealing device of a bag manufacture package filling machine which carries out the heat seal of the periphery of said mutual packaging film, and manufactures a separate-packaging article, While being supported by bearing bracket movable to said heater roll of another side, a bearing holding a shank of both ends in said at least one heater roll, respectively, said each bearing is connected to a piston rod of a fluid pressure cylinder, respectively -- said each fluid pressure cylinder operates so that said one heater roll may be pressed to said heater roll of another side

[An operation and an effect] of a device

While making a bearing bracket support a bearing holding a shank of both ends of at least one heater roll movable to a heater roll of another side in a sealing device concerning this device, It is made to connect with a piston rod of a fluid pressure cylinder which used easily maintainable fluids, such as exhaust air and an oil, for constant pressure, respectively, and it is constituted so that one heater roll may be pressed to a heater roll of another side.

Therefore, if hydrostatic pressure of a fluid pressure cylinder is fixed, even if heat of a heater roll is added to exhaust air or a packaging film has thickness, a packaging film can be pinched with constant pressure with two heater rolls.

Therefore, in a sealing device concerning this device, a packaging film can be pinched with constant pressure with a heater roll, and it becomes possible to prevent a pinhole of a packaging film, and generating of a sealing failure.

[Example]

Hereafter, one example of this device is described based on a drawing.

The bag manufacture package filling machine M0 of an example accumulates the seven separate-packaging articles W, and on the tape T, banding is carried out and it boxes them while it manufactures the separate-packaging article W which consists of three separate packaging B, as shown in drawing 6 - 8.

And it has the measuring filling apparatus M2, the sealing device M1, the cutter device M3, the metering installation M4, the accumulation apparatus M5, the banding device M6, an encasing apparatus that is not illustrated, and the single package metering installation M7, and the bag manufacture package filling machine M0 is constituted, as shown in drawing 6.

The measuring filling apparatus M2 measures a constant rate of contents Y, and supplies them to the sealing device M1 from the hopper 2. At the time of supply of the contents Y, this hopper 2 will descend, will insert the nozzle 2a between packaging film F1 and F2 in crevice 3b and 4b of the heater rolls 3 and 4, and will be filled up with the contents Y.

The cutter device M3 performs the cut of the right-and-left both edges of the continuous separate-packaging article W, formation of slit S and the eye notch I (refer to drawing 8), the cut made to divide into the separate-packaging article W per piece further, etc.

[0017]

The metering installation M4 adjusts measuring of the measuring filling apparatus M2.

The accumulation apparatus M5 makes the seven separate-packaging articles W accumulate, the banding device M6 bundles the seven accumulated separate-packaging articles W with the tape T, and an encasing apparatus is a device which packs the separate-packaging article W which carried out banding on the tape T in a package box.

In order that the single package metering installation M7 may adjust measuring of the measuring filling apparatus M2, at the time of predetermined, it operates the predetermined edge of the cutter device M3, makes it divide the separate-packaging article W into one bundle at a time, and measures every one bundle of single package B.

The sealing device M1 of the example is provided with the two heater rolls 3 and 4 as shown in drawing 1 - 3. Each heater rolls 3 and 4 are provided with the heights 3a and 4a for forming seal part C (drawing 7 and 8 reference) of the separate-packaging article W in a peripheral face, and the crevices 3b and 4b for filling the contents Y in each separate packaging B, in order to form except seal part C. The heights 3a and 4a and the crevices 3b and 4b will manufacture the five separate-packaging articles W, when it is formed in the hoop direction of each heater rolls 3 and 4 five ***** at a time and the heater rolls 3 and 4 rotate one time mutually.

Shank 3c.3d and 4c.4d used as a byway are formed in the both ends of each heater rolls 3 and 4, and it is supported by the bearings 5, 6, 7, and 8 provided with the bearing (figure numerals abbreviation), respectively.

The belt pulley which is not illustrated adheres to shank 3d.4d by the side of the back of each heater rolls 3 and 4, and it is transmitted via the belt which the driving force from the driving source of the bag manufacture package filling machine M0 does not illustrate, and it is constituted so that it may rotate by counterrotation synchronizing with mutual.

The heater which is not illustrated as a heat source is built in the inside of the heater rolls 3 and 4, and it is constituted so that each heater rolls 3 and 4 may be maintained to prescribed temperature.

And the tabular slide members 5a and 6a with the bearings 5 and 6 square on a periphery are arranged, it is supported by the bearing bracket 9, the bearings 7 and 8 are held at the bearing bracket 10, and the bearing brackets 9 and 10 are being fixed to the support plate 11, respectively. The connecting lock of the support plate 11 is carried out to the frame 1 (refer to drawing 6) of the bag manufacture package filling machine M0.

The bearing bracket 9 is made into reverse KO type.

The upper and lower sides by the side of inner circumference are equipped with the guide rails 9a and 9b prolonged horizontally, and each bearings 5 and 6 make the concaves 5b and 6b formed in the upper and lower sides of the slide members 5a and 6a fit into the guide rails 9a and 9b, and are horizontally supported by the bearing bracket 9 movable.

The bearing bracket 10 holds each bearings 7 and 8 as square tabular [which covers the circumference of each bearings 7 and 8], without making it move.

The piston rod 14 of the air cylinder 12 penetrates the bearing bracket 9 to the bearings 5 and 6, and is connected to them, respectively.

Each air cylinder 12 is provided with the precision pressure regulating valve which is not illustrated, and it is constituted so that the piston rod 14 may be moved to the right direction by a fixed pressure, while having the cylinder body 13 and the piston rod 14 which slides by low friction to the cylinder body 13 and being constituted. Each air cylinder 12 is being fixed to the bearing bracket 9 using the base 13a of the cylinder body 13.

Each piston rod 14 made the Motobe side who keeps away from the heater roll 3 project from the cylinder body 13, and equips the end with the 1-mm-pitch external threaded section 15.

The nut 16 which had the spline 16a formed in a peripheral face is screwed in each of these external threaded sections 15, and the minute angle adjustment mechanism 17 is allocated by the periphery of each nut 16.

The minute angle adjustment mechanism 17 builds the predetermined gear in the inside. By carrying out, angle theta rotation rotates the narrow diameter portion 17c for the major diameter 17a theta/100 to the narrow diameter portion 17b.

This minute angle adjustment mechanism 17 is making the narrow diameter portion 17b fix to the attaching bracket 18 fixed to the cylinder body 13. By and the inner skin and the bottom wall 17e which the crevice 17d corresponding to the spline 16a of the peripheral face of the nut 16 is formed in the inside of the narrow diameter portion 17c, and are the crevices 17d. Rotation of the nut 16 and movement by the side of the air cylinder 12 are regulated, and movement isolated from the air cylinder 12 of the nut 16 is permitted.

While the sensor rod 19 provided with the tongue-shaped piece 19a is attached, the tongue-shaped piece 19a is countered and the proximity switch 20 fixed to the attaching bracket 18 is allocated at the tip by the side of Motobe of each piston rod 14. This proximity switch 20 confirms whether to be the no by which the contents Y were blown by seal part C at the time of manufacture of the separate-packaging article W.

21 is a guide idler which is arranged in the upper part of the bearing brackets 9 and 10, and draws packaging film F1 and F2 among the heater rolls 3 and 4.

When supply of packaging film F is described, as shown in drawing 6, the supply from the roll R of packaging film F to each heater rolls 3 and 4, It is performed by pinching of 3-heater roll 4 rotating the very thing, and the feed roller M3R of the cutter device M3, and the packaging film thickness deviation absorber styles 22L and 22R as shown in drawing 4 - 6 are allocated in the sealing device M1 of an example. Even if this thickness deviation absorber style 22L and the thickness deviation absorber style 22R have thickness crosswise [of packaging film F1 and F2], the heater rolls 3 and 4 are made to supply them, without generating wrinkles.

And the thickness deviation absorber style 22L and the thickness deviation absorber style 22R are only considering it as the symmetric figure, there is no difference mechanistically, if the mechanism is described briefly, it has the tension roller 23, and is constituted and the tension roller 23 is making the bearing 24 support both ends, as shown in drawing 4 and 5. Each bearing 24 is held so that the up-and-down motion to the bearing bracket 26 is possible, while being energized upwards by the coil spring 25. Maintenance to the bearing bracket 26 of each bearing 24 is performed by making the flange 24a provided in the edge of the right and left of the bearing 24 contact the periphery of the hole 26a of the bearing bracket 26. 27 is a bolt which regulates movement to the upper part of the bearings 24 and 24. In this thickness deviation absorber style 22, even if thickness is crosswise [of packaging film F], Since the near bearing 24 of a thick part can resist the energizing force of the coil spring 25, and can descend, it can cross throughout the cross direction of packaging film F and a tension can be added to packaging film F, Packaging film F1 and F2 can be supplied to the heater rolls 3 and 4, without generating wrinkles.

Each heater rolls 3 and 4 rotating reversely mutually, and pinching packaging film F1 and F2 next, if the operation mode of the sealing device M1 of an example is explained. It will be filled up with the contents Y between packaging film F1 and F2, the heat seal of the periphery of mutual packaging film F1 and F2 will be carried out, and the separate-packaging article W will be manufactured. At the time of restoration of the contents Y, the hopper 2 will descend, the

nozzle 2a will be inserted between packaging film F1 and F2 in crevice 3b and 4b of the heater rolls 3 and 4, and it will be filled up with the contents Y.

And at the time of an operation in the sealing device M1 of an example. While making the bearing bracket 9 support the bearings 5 and 6 holding shank 3c.3d of the both ends of the heater roll 3 movable to the heater roll 4 of another side, It is made to connect with the piston rod 14 of the air cylinder 12 which used easily maintainable exhaust air for constant pressure, respectively, and it is constituted so that the heater roller 3 may be pressed to the heater roller 4.

Therefore, if air pressure of the air cylinder 12 is fixed, even if the heat of the heater roll 3 is added to exhaust air or packaging film F1 and F2 have thickness, Packaging film F1 and F2 can be pinched with constant pressure with the two heater rolls 3 and 4, and the same effect is done so with the column of the operation and the effect of a device as stated above having described.

In the sealing device M1 of an example, if the major diameter 17a of the minute angle adjustment mechanism 17 is rotated one time, for example when adjusting the gap of the heater rolls 3 and 4, the narrow diameter portion 17c and 3.6 degrees of nuts can be rotated. Namely, 0 which is 1/100 [1 pitch 1 mm] of the external threaded section 15 about the piston rod 14 of the air cylinder 12.

It can be made to move to the distance of 01 mm, and shaft orientations, and fine adjustment between the heater rolls 3-4 can be adjusted per micron via the bearings 5 and 6 at the tip of each piston rod 14. Therefo

re, a pinhole and a sealing failure can be prevented from occurring corresponding to the thickness of packaging film F1 and F2 in packaging film F1 and F2 which can adjust appropriately the gap between the heater rolls 3-4, and carries out a heat seal further.

In order to cover air pressure with each constant air cylinder 12 and to try to move the piston rod 14 to the right direction at the time of rotation of this nut 16, When rotating so that it may move in the direction (the direction of a tip of the external threaded section 15) from which the nut 16 separates from the external threaded section 15, the heater roll 3 will approach the heater roll 4 via the bearings 5 and 6. On the contrary, when rotating so that the nut 16 may be arranged deeply at the external threaded section 15, the heater roll 3 will separate from the heater roll 4 via the bearings 5 and 6.

Although what consists of three separate packaging B was illustrated as the separate-packaging article W which carries out a heat seal in the example, when manufacturing one or the separate-packaging article W which consists of four or more separate packaging B further two, of course, this design can be applied.

EXAMPLE

[Example]

Hereafter, one example of this device is described based on a drawing.

The bag manufacture package filling machine M0 of an example accumulates the seven separate-packaging articles W, and on the tape T, banding is carried out and it boxes them while it

manufactures the separate-packaging article W which consists of three separate packaging B, as shown in drawing 6 - 8.

And it has the measuring filling apparatus M2, the sealing device M1, the cutter device M3, the metering installation M4, the accumulation apparatus M5, the banding device M6, an encasing apparatus that is not illustrated, and the single package metering installation M7, and the bag manufacture package filling machine M0 is constituted, as shown in drawing 6.

The measuring filling apparatus M2 measures a constant rate of contents Y, and supplies them to the sealing device M1 from the hopper 2. At the time of supply of the contents Y, this hopper 2 will descend, will insert the nozzle 2a between packaging film F1 and F2 in crevice 3b and 4b of the heater rolls 3 and 4, and will be filled up with the contents Y.

The cutter device M3 performs the cut of the right-and-left both edges of the continuous separate-packaging article W, formation of slit S and the eye notch I (refer to drawing 8), the cut made to divide into the separate-packaging article W per piece further, etc.

The metering installation M4 adjusts measuring of the measuring filling apparatus M2. The accumulation apparatus M5 makes the seven separate-packaging articles W accumulate, the banding device M6 bundles the seven accumulated separate-packaging articles W with the tape T, and an encasing apparatus is a device which packs the separate-packaging article W which carried out banding on the tape T in a package box.

In order that the single package metering installation M7 may adjust measuring of the measuring filling apparatus M2, at the time of predetermined, it operates the predetermined edge of the cutter device M3, makes it divide the separate-packaging article W into one bundle at a time, and measures every one bundle of single package B.

The sealing device M1 of the example is provided with the two heater rolls 3 and 4 as shown in drawing 1 - 3. Each heater rolls 3 and 4 are provided with the heights 3a and 4a for forming seal part C (drawing 7 and 8 reference) of the separate-packaging article W in a peripheral face, and the crevices 3b and 4b for filling the contents Y in each separate packaging B, in order to form except seal part C. The heights 3a and 4a and the crevices 3b and 4b will manufacture the five separate-packaging articles W, when it is formed in the hoop direction of each heater rolls 3 and 4 five ***** at a time and the heater rolls 3 and 4 rotate one time mutually.

Shank 3c.3d and 4c.4d used as a byway are formed in the both ends of each heater rolls 3 and 4, and it is supported by the bearings 5, 6, 7, and 8 provided with the bearing (figure numerals abbreviation), respectively.

The belt pulley which is not illustrated adheres to shank 3d.4d by the side of the back of each heater rolls 3 and 4, and it is transmitted via the belt which the driving force from the driving source of the bag manufacture package filling machine M0 does not illustrate, and it is constituted so that it may rotate by counterrotation synchronizing with mutual.

The heater which is not illustrated as a heat source is built in the inside of the heater rolls 3 and 4,

and it is constituted so that each heater rolls 3 and 4 may be maintained to prescribed temperature.

And the tabular slide members 5a and 6a with the bearings 5 and 6 square on a periphery are arranged, it is supported by the bearing bracket 9, the bearings 7 and 8 are held at the bearing bracket 10, and the bearing brackets 9 and 10 are being fixed to the support plate 11, respectively. The connecting lock of the support plate 11 is carried out to the frame 1 (refer to drawing 6) of the bag manufacture package filling machine M0.

The bearing bracket 9 is made into reverse KO type.

The upper and lower sides by the side of inner circumference are equipped with the guide rails 9a and 9b prolonged horizontally, and each bearings 5 and 6 make the concaves 5b and 6b formed in the upper and lower sides of the slide members 5a and 6a fit into the guide rails 9a and 9b, and are horizontally supported by the bearing bracket 9 movable.

The bearing bracket 10 holds each bearings 7 and 8 as square tabular [which covers the circumference of each bearings 7 and 8], without making it move.

The piston rod 14 of the air cylinder 12 penetrates the bearing bracket 9 to the bearings 5 and 6, and is connected to them, respectively.

Each air cylinder 12 is provided with the precision pressure regulating valve which is not illustrated, and it is constituted so that the piston rod 14 may be moved to the right direction by a fixed pressure, while having the cylinder body 13 and the piston rod 14 which slides by low friction to the cylinder body 13 and being constituted. Each air cylinder 12 is being fixed to the bearing bracket 9 using the base 13a of the cylinder body 13.

Each piston rod 14 made the Motobe side who keeps away from the heater roll 3 project from the cylinder body 13, and equips the end with the 1-mm-pitch external threaded section 15.

The nut 16 which had the spline 16a formed in a peripheral face is screwed in each of these external threaded sections 15, and the minute angle adjustment mechanism 17 is allocated by the periphery of each nut 16.

The minute angle adjustment mechanism 17 builds the predetermined gear in the inside. By carrying out, angle theta rotation rotates the narrow diameter portion 17c for the major diameter 17a theta/100 to the narrow diameter portion 17b.

This minute angle adjustment mechanism 17 is making the narrow diameter portion 17b fix to the attaching bracket 18 fixed to the cylinder body 13. By and the inner skin and the bottom wall 17e which the crevice 17d corresponding to the spline 16a of the peripheral face of the nut 16 is formed in the inside of the narrow diameter portion 17c, and are the crevices 17d. Rotation of the nut 16 and movement by the side of the air cylinder 12 are regulated, and movement isolated from the air cylinder 12 of the nut 16 is permitted.

While the sensor rod 19 provided with the tongue-shaped piece 19a is attached, the tongue-shaped piece 19a is countered and the proximity switch 20 fixed to the attaching bracket 18 is

allocated at the tip by the side of Motobe of each piston rod 14. This proximity switch 20 confirms whether to be the no by which the contents Y were blown by seal part C at the time of manufacture of the separate-packaging article W.

21 is a guide idler which is arranged in the upper part of the bearing brackets 9 and 10, and draws packaging film F1 and F2 among the heater rolls 3 and 4.

When supply of packaging film F is described, as shown in drawing 6, the supply from the roll R of packaging film F to each heater rolls 3 and 4, It is performed by pinching of 3-heater roll 4 rotating the very thing, and the feed roller M3R of the cutter device M3, and the packaging film thickness deviation absorber styles 22L and 22R as shown in drawing 4 - 6 are allocated in the sealing device M1 of an example. Even if this thickness deviation absorber style 22L and the thickness deviation absorber style 22R have thickness crosswise [of packaging film F1 and F2], the heater rolls 3 and 4 are made to supply them, without generating wrinkles.

And the thickness deviation absorber style 22L and the thickness deviation absorber style 22R are only considering it as the symmetric figure, there is no difference mechanistically, if the mechanism is described briefly, it has the tension roller 23, and is constituted and the tension roller 23 is making the bearing 24 support both ends, as shown in drawing 4 and 5. Each bearing 24 is held so that the up-and-down motion to the bearing bracket 26 is possible, while being energized upwards by the coil spring 25. Maintenance to the bearing bracket 26 of each bearing 24 is performed by making the flange 24a provided in the edge of the right and left of the bearing 24 contact the periphery of the hole 26a of the bearing bracket 26. 27 is a bolt which regulates movement to the upper part of the bearings 24 and 24. In this thickness deviation absorber style 22, even if thickness is crosswise [of packaging film F], Since the near bearing 24 of a thick part can resist the energizing force of the coil spring 25, and can descend, it can cross throughout the cross direction of packaging film F and a tension can be added to packaging film F, Packaging film F1 and F2 can be supplied to the heater rolls 3 and 4, without generating wrinkles.

Each heater rolls 3 and 4 rotating reversely mutually, and pinching packaging film F1 and F2 next, if the operation mode of the sealing device M1 of an example is explained. It will be filled up with the contents Y between packaging film F1 and F2, the heat seal of the periphery of mutual packaging film F1 and F2 will be carried out, and the separate-packaging article W will be manufactured. At the time of restoration of the contents Y, the hopper 2 will descend, the nozzle 2a will be inserted between packaging film F1 and F2 in crevice 3b and 4b of the heater rolls 3 and 4, and it will be filled up with the contents Y.

And at the time of an operation in the sealing device M1 of an example. While making the bearing bracket 9 support the bearings 5 and 6 holding shank 3c.3d of the both ends of the heater roll 3 movable to the heater roll 4 of another side, It is made to connect with the piston rod 14 of the air cylinder 12 which used easily maintainable exhaust air for constant pressure, respectively, and it is constituted so that the heater roller 3 may be pressed to the heater roller 4.

Therefore, if air pressure of the air cylinder 12 is fixed, even if the heat of the heater roll 3 is added to exhaust air or packaging film F1 and F2 have thickness, Packaging film F1 and F2 can be pinched with constant pressure with the two heater rolls 3 and 4, and the same effect is done

so with the column of the operation and the effect of a device as stated above having described.

In the sealing device M1 of an example, if the major diameter 17a of the minute angle adjustment mechanism 17 is rotated one time, for example when adjusting the gap of the heater rolls 3 and 4, the narrow diameter portion 17c and 3.6 degrees of nuts can be rotated. Namely, 0 which is 1/100 [1 pitch 1 mm] of the external threaded section 15 about the piston rod 14 of the air cylinder 12.

It can be made to move to the distance of 01 mm, and shaft orientations, and fine adjustment between the heater rolls 3-4 can be adjusted per micron via the bearings 5 and 6 at the tip of each piston rod 14. Therefore, a pinhole and a sealing failure can be prevented from occurring corresponding to the thickness of packaging film F1 and F2 in packaging film F1 and F2 which can adjust appropriately the gap between the heater rolls 3-4, and carries out a heat seal further.

In order to cover air pressure with each constant air cylinder 12 and to try to move the piston rod 14 to the right direction at the time of rotation of this nut 16, When rotating so that it may move in the direction (the direction of a tip of the external threaded section 15) from which the nut 16 separates from the external threaded section 15, the heater roll 3 will approach the heater roll 4 via the bearings 5 and 6. On the contrary, when rotating so that the nut 16 may be arranged deeply at the external threaded section 15, the heater roll 3 will separate from the heater roll 4 via the bearings 5 and 6.

Although what consists of three separate packaging B was illustrated as the separate-packaging article W which carries out a heat seal in the example, when manufacturing one or the separate-packaging article W which consists of four or more separate packaging B further two, of course, this design can be applied.

EFFECT OF THE INVENTION

[An operation and an effect] of a device

While making a bearing bracket support a bearing holding a shank of both ends of at least one heater roll movable to a heater roll of another side in a sealing device concerning this device, It is made to connect with a piston rod of a fluid pressure cylinder which used easily maintainable fluids, such as exhaust air and an oil, for constant pressure, respectively, and it is constituted so that one heater roll may be pressed to a heater roll of another side.

Therefore, if hydrostatic pressure of a fluid pressure cylinder is fixed, even if heat of a heater roll is added to exhaust air or a packaging film has thickness, a packaging film can be pinched with constant pressure with two heater rolls.

Therefore, in a sealing device concerning this device, a packaging film can be pinched with constant pressure with a heater roll, and it becomes possible to prevent a pinhole of a packaging film, and generating of a sealing failure.